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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,206	08/22/2006	Shu Kobayashi	1680/55	5091
25297 7590 07/05/2011 JENKINS, WILSON, TAYLOR & HUNT, P. A. 3100 Tower Blvd. Suite 1200 DURHAM, NC 27707				
EXAMINER				
BERNS, DANIEL J				
ART UNIT		PAPER NUMBER		
1736				
MAIL DATE		DELIVERY MODE		
07/05/2011		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/590,206

Applicant(s)

KOBAYASHI ET AL.

Examiner

DANIEL BERNIS

Art Unit

1736

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Applicant is advised that should claim 11 be found allowable, claim 13 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. *See* MPEP § 706.03(k). Claim 13's A1) monomer appears to recite, verbatim, claim 11's B1) monomer.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Zecca et al.'s 1998 article ("Zecca"). Regarding claims 1 and 5-7, Zecca discloses a polymer-supported metal cluster composition ("PSMCC") comprising Pd⁰ supported by a cross-linked polymer, the latter being obtained by cross-linking a cross-linkable polymer containing both hydrophobic (e.g., the phenyl group in styrene) and hydrophilic (e.g., the sulfonic acid moiety in methacryloxyethylsulfonic acid; "MESA") side chains (i.e., the cross-linking agent being methylenebisacrylamide), wherein the hydrophilic side chain has a cross-linkable functional group (the methacryloxy- group) and the hydrophobic side chain is free of hydrophilic substituents and cross-linkable functional groups. *See* Zecca at sec. 2.1 and 2.3-2.5.

Regarding claims 8 and 9, Zecca's MESA comprises both carboxyl and hydroxyl groups.
See id. at sec. 2.1.

Regarding claim 10, Zecca's cross-linkable polymer is a copolymer formed by copolymerizing monomers B2 (styrene) and B3 (MESA) as claimed. *See id.* at 2.1 and 2.3.

4. Claims 1-3 and 5-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Kobayashi et al., WO 2004/024323 (published 3/25/04) ("'323")¹. NOTE: Applicant cannot rely upon its foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. *See* MPEP § 201.15.

Regarding claims 1 and 5-9, '323 discloses a PSMCC comprising Pd⁰ supported by a cross-linked polymer, the latter being obtained by cross-linking a cross-linkable polymer containing both hydrophobic (e.g., the phenyl group in material (2)'s styrene) and hydrophilic (e.g., the glycidyl group or hydroxyalkyl chain in materials (1) and (3)) side chains, wherein the hydrophilic side chain has a cross-linkable functional group (i.e., the glycidyl group or carboxyl group of (1) and (3), respectively) and the hydrophobic side chain is free of hydrophilic substituents and cross-linkable functional groups. *See* '323 at, e.g., clms. 1, 2, 4 and 14.

Regarding claim 2, '323 discloses that its PSMCC is prepared in solution by supporting the Pd⁰ upon/within a dissolved, cross-linkable polymer, and then cross-linking said polymer. *See id.* at, e.g., clm. 17. Pre-crosslinking micelle formation is implied, since '323 states that only the *polymer* is dissolved within the solvent, while both the polymer and the Pd⁰ are placed therein. *See id.*

¹ NOTE: The Office is using EP 1537913 as an accurate translation of '323, as the latter document is in Japanese. '323 is expressly noted as being the international publication, and thus equivalent, of the EP doc. While the rejection itself is made over '323, all paragraph, claim, etc. citations within rejections over '323 shall in fact refer to portions within the EP doc.

Regarding claim 3, '323's cross-linkable polymer contains an aromatic, hydrophobic side chain (i.e., material (2) as detailed above). *See id.* at clm. 14. Since '323 employs a Pd⁰ chelate such as PPh₃:Pd⁰, *see id.* at clms.17 and 18, micelle formation implicitly/inherently occurs by supporting the Pd⁰ via ligand exchange between the chelate and the polymer's aromatic group(s). *See In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01.

Regarding claim 10, '323's cross-linkable polymer is a copolymer formed from polymerizing at least B2) and B3) monomers ('323's materials (2) and (1), respectively). *See* '323 at clms. 1 and 14.

Regarding claim 11, '323 discloses B2) and B3) monomer structures as claimed. *See id.* at, e.g., clms. 1, 4, 8 (e.g., p. 32, ln. 45 to p. 33, ln. 14: material (1) employing substructures [1] and [3]; and p. 34, ln. 1-13: material 2) employing structure [6]), 11 and 14; par. 15, 17, 20, 65, 71 and 75.

Regarding claim 12, '323's composition can be employed as an oxidation catalyst. *See id.* at clm. 20.

Regarding claim 13, '323 discloses an A1) monomer structure as claimed. *See id.* at, e.g., clms. 1, 4, 8 (e.g., p. 33, ln. 15-58: material (1) employing substructures [4] or [5]) and 11; par. 15, 30, 62 and 64 (e.g., p. 11, ln. 8-36).

Claim Rejections - 35 USC § 102/103 and 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. In considering the obviousness rejections below, the applicant should note that the person having ordinary skill in the art at the time of the invention has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in the application reasonably reflect this level of skill.

9. Claims 1-13 are rejected under 35 U.S.C. 102(a) as being anticipated by '323² or, in the alternative, under 35 U.S.C. 103(a) as being unpatentable over the same. NOTE: Applicant cannot rely upon its foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Regarding claims 1-3 and 5-13, '323's teachings are as above. Regarding claim 4, while '323 does not explicitly state that its Pd⁰ clusters are ≤20 nm in diameter, given that '323's product is made in at least substantially the same fashion as that claimed (*see* discussion *vis-à-vis*

² See fn. 1, above.

claim 2, above), the clusters' size range may reasonably be thought to be inherently within that claimed. *In re Best*; MPEP 2112.01.

10. Claims 1, 5-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zecca in view of Akiyama et al.'s 2003 JACS article ("JACS"). Regarding claims 1 and 5-10, Zecca's teachings are as above. Regarding claim 12, the difference between said claim and Zecca is that the latter fails to explicitly teach the use of its composition in one or more of the listed reactions. This limitation, however, is taught by JACS.

JACS similarly teaches polymer-supported Pd⁰ compositions. *See* JACS at p. 3412, col. 1, 3rd par. JACS states that employing such compositions as a catalyst in hydrogenations instead of the commonly-employed Pd/C produces similar yields to those obtained with the latter, but without Pd/C's risk of (or actual) ignition. *See id.* at p. 3412, col. 1, 4th par. to p. 3413, 1st par.; Table 1. Given the foregoing advantage, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ Zecca's composition as a catalyst in such reactions as hydrogenations, to achieve enhanced safety while maintaining comparable yield therein as taught by JACS.

Response to Arguments

11. Applicant's 4-15-11 arguments with respect to rejections over JACS have been considered but are moot in view of the new grounds of rejection, necessitated by applicant's contemporaneous claim amendments. It should be noted that said amendments overcame the 1-21-11 rejections over JACS, as illustrated by the 4-15-11 arguments, but that the arguments themselves were moot in view of the amendments' overcoming the JACS rejections. Also, applicant's amendments have overcome all rejections under 35 U.S.C. 112 and claim objections.

Conclusion

12. Applicant's amendments, as well as the submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 4-15-11 prompted the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b) and 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **DANIEL BERNS** whose telephone number is (571)270-5839. The examiner can normally be reached on Monday thru Thursday, 9AM-6PM. If attempts to reach the Examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at (571)272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. B./ June 29, 2011
Examiner, Art Unit 1736

/Stuart Hendrickson/
Primary Examiner, Art Unit 1736